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AMENDED SPECIFICATION.

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PATENT SPECIFICATION



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PROVISIONAL SPECIFICATION (AMENDED).

Improvements in or relating to Fastening Devices adapted to be operated by means of a Sliding Member.

We, JOHN HENRY COLLINS, of 84, Sutton Road, Muswell Hill, London, N.10, and CHARLES JOHN CRAWFORD, of "Alresford", Friary Way, North Finchley, London, N.12, both British subjects, do hereby declare the nature of this invention to be as follows:—

This invention relates to fastening devices of the kind comprising two longitudinally extending members each bearing a series of flexible projections, the projections of one series being adapted to be brought into and out of inter-locking engagement with the projections of the other series by means of a member bearing cam surfaces and adapted to be slid along the longitudinally extended members:

The invention will be illustrated by the aid of the accompanying drawing wherein Figure 1 is a plan view of a fastening device of the kind specified.

Figure 2 a longitudinal section and Figure 3 a transverse section of a sliding member thereof drawn to an enlarged scale.

Figure 4 is a transverse section of an alternative form of the sliding member.

Figure 5 shows separately the parts of the sliding member illustrated in Figures 1, 2 and 3.

According to our invention, in order that the longitudinally extending members (such as *a*, *b*) shall be accurately spaced apart at the time when the flexible projections (*c*, *c*) are being brought into and out of interlocking engagement with one another by means of the cams (such as *d*, *e*), the longitudinally extending members are provided with guide ribs or strips on both sides of the pieces (such as *f*, *g*) of fabric or other material to be fastened, such guide ribs or strips (such as *h*, *i*) running in corresponding guide-

ways (*k*, *l*) in the sliding member. One (such as in Figure 3) or both (such as in Figure 4) of the pairs of guideways and the corresponding parts of the longitudinally extending members are so shaped as to control or prevent the movement of such longitudinally extending members both towards and away from one another. For example, the longitudinally extending members may consist of strips of moulded india rubber having ribs (such as *h*) extending transversely to the planes of the interlocking projections, either on one (*h*) or both sides (*h*, *h'*) of the strip forming each longitudinally extending member. One of said ribs (such as *h*) may form at its free edge the surface which is secured to the one side of the border of the corresponding piece (*f* or *g*) of fabric or other material to be fastened, whilst the rib (such as *h'*) on the other side of the longitudinally extending member may register with the first mentioned rib or be arranged at a greater distance from the interlocking projections, as in Figure 4. In the latter case, the wall (such as *h*) of the guide channel may be extended so as to guide the longitudinally extending member in both directions in each of two planes at right angles to one another. A longitudinally extending rib (such as *j*) is preferably provided on the opposite side of each of the corresponding pieces of fabric or other material to be fastened, such ribs sliding in grooves (such as *l*) in the corresponding side of the slider. The parts of the sliding member into which the separate longitudinally extending members enter as they approach the cams are provided with suitably shaped extensions (such as *m*) on the outer side to press any of the flexible projections (*c*) that may be in an

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- irregular position into line to enable them to be uniformly acted upon by the cams (d, e). Such extensions may be advantageously curved outwards at their outer ends. 5 The guides for guiding the ribs on both sides of the pieces of fabric or other material to be fastened together are advantageously made from a single piece 10 of sheet metal, the upper and lower guides being united by a strip of metal (such as n) which is bent to form part of the connection between the said upper and lower guide parts of the sliding member. 15 such upper and lower parts being also connected by a distance piece (such as o) and a rivet (such as p) or screw extending through said distance piece. The cams are advantageously secured in the end or 20 guide parts of the piece of sheet metal by means of lugs (such as q) extending through holes or slots (such as r) in the sheet metal, the median cam (d) being advantageously also secured by the distance
- piece in conjunction with the rivet or 25 screw. The outer cams (c, c) opposite to the median cam (d) are advantageously made from one piece of sheet metal and have domed surfaces for engaging the interlocking projections (c) on the longitudinally extending members. Or rollers can be employed instead of the domed cams. 30
- In some cases, the longitudinally extended members can be moulded of 35 india rubber with a median slit in the edge remote from that bearing the interlocking projections, such slit being adapted to receive the border of one of the pieces of fabric or other material to be fastened, which may be cemented or secured therein in any suitable manner. 40

Dated this 24th day of December, 1931.

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11 & 12, Southampton Buildings,
London, W.C.2,
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COMPLETE SPECIFICATION (AMENDED).

Improvements in or relating to Fastening Devices adapted to be operated by means of a Sliding Member.

We, JOHN HENRY COLLINS, of 84, Sutton Road, Muswell Hill, London, 45 N.10, and CHARLES JOHN CRAWFORD, of "Alresford," Friary Way, North Finchley, London, N.12, both British subjects, do hereby declare the nature of this invention and in what manner the 50 same is to be performed, to be particularly described and ascertained in and by the following statement:—

This invention relates to fastening devices as claimed in Specification No. 55 333,267 comprising two longitudinally extending members which are secured to borders of the pieces of fabric or other material to be fastened together, each of the longitudinally extending members bearing a series of projections made of 60 india rubber or like flexible material, the projections of one series being adapted to be brought into and out of interlocking engagement with the projections of the other series by means of a member bearing cam surfaces and adapted to be slid along the longitudinally extending members.

According to our invention, in order 70 that the longitudinally extending members shall be accurately spaced apart at the time when the flexible projections are being brought into and out of engagement with one another by means of the cams

of the sliding member, guide ribs or strips are provided on both sides of the pieces of fabric or other material, and one or both of the pairs of guide ribs or strips and corresponding guideways in the sliding member are so shaped as to control the movement of the longitudinally extending members both towards and away from one another. The guide rib or strip on the upper or outer side of each piece of fabric or other material is 75 advantageously formed integrally with the longitudinally extending member, which is secured to the piece of fabric or other material by sewing or in any other suitable manner, whilst the guide rib or strip on the lower or inner side of each piece of fabric or other material may conveniently be in the form of a cord of any suitable material suitably secured to the piece of fabric or other material. 80

The invention will be further described with reference to the drawing left with our Provisional Specification wherein

Figure 1 is a plan view of a fastening in accordance with my invention.

Figure 2 is a longitudinal section, and Figure 3 a transverse section of a sliding member thereof drawn to an enlarged scale.

Figure 4 is a transverse section of an 105 alternative form of the sliding member.

Figure 5 shows separately the parts of the sliding member illustrated in Figures 1, 2 and 3.

Referring to Figures 1, 2 and 3, the longitudinally extending members *a*, *b*, which are secured to the upper or outer side of pieces *f*, *g* of the fabric or other material to be fastened, bear flexible projections *c*, *c* which are brought into and out of interlocking engagement with one another by means of the cams *d*, *e* of the sliding member. The longitudinally extending members *a*, *b* are provided with guide ribs or strips *h* extending transversely to the planes of the interlocking projections, and are guided by suitably shaped guideways *k* in the slider, the ribs or strips *h* being guided by the free edges or borders of such guideways *k*. The longitudinally extending members *a*, *b* are preferably of soft vulcanised india rubber moulded integrally with the projections *c*, *c* and guide ribs *h*. Cords *j* are secured to the borders of the pieces *f*, *g* of fabric or other material on the lower or inner side of such pieces, and run in guideways *l* which are provided in the lower body member of the slider and which are so shaped that movement of the longitudinally extending members both towards and away from one another is controlled.

Preferably, both of the pairs of guide ribs or strips and the corresponding guideways are so shaped as to control the movement of the longitudinally extending members *a*, *b* both towards and away from one another. For example, as shown in Figure 4, cords *j* secured to the ends of the pieces of fabric *f*, *g* run in suitably shaped guideways *l*, as in the device shown in Figure 3, and the longitudinally extending members, which may consist of strips of moulded india rubber, have ribs *h*, *h*¹, extending transversely to the planes of the interlocking projections, on both sides of the strip forming each longitudinally extending member. Each of the ribs *h* forms at its free edge the surface which is secured to the one side of the border of the corresponding piece *f* or *g* of fabric or other material to be fastened, whilst the rib *h*¹ on the other side of each longitudinally extending member, which rib may register with the first mentioned rib or be arranged at a greater distance from the interlocking projections, as shown in Figure 4, is guided in a correspondingly shaped guideway *k*, so that each longitudinally extending member is guided in both directions in each of two planes at right angles to one another.

The parts of the sliding member into which the separate longitudinally extend-

ing members enter as they approach the cams *d*, *e* may be provided with suitably shaped extensions *m* on the outer or upper side to press any of the flexible projections *c* that may be in an irregular position into line to enable them to be uniformly acted upon by the cams. Such extensions may be advantageously curved outwards at their outer ends and may be provided with domed internally extending guide surfaces formed integrally therewith.

The guides for guiding the ribs on both sides of the pieces of fabric or other material to be fastened together are advantageously made from a single piece of sheet metal, the upper and lower guides being united by a strip of metal (such as *n*) which is bent to form part of the connection between the said upper and lower guide parts of the sliding member, such upper and lower parts being also connected by a distance piece (such as *o*) and a rivet (such as *p*) or screw extending through said distance piece. The cams are advantageously secured in the end or guide parts of the piece of sheet metal by means of lugs (such as *q*) extending through holes or slots (such as *r*) in the sheet metal, the median cam *d* being advantageously also secured by the distance piece in conjunction with the rivet or screw. The outer cams *e*, *e* opposite to the median cam *d* are advantageously made from one piece of sheet metal and have domed surfaces for engaging the interlocking projections *c* on the longitudinally extending members. Or rollers can be employed instead of the domed cams.

The cams *e* can, moreover, be formed integrally with the piece of sheet metal forming the body of the slider. The cam *d* can also be formed integrally with such piece of sheet metal.

In some cases, the longitudinally extending members can be moulded of india-rubber with a median slit in the edge remote from that bearing the interlocking projections, such slit being adapted to receive the border of one of the pieces of fabric or other material to be fastened, which may be cemented or secured therein in any suitable manner.

Having now particularly described and ascertained the nature of our said invention and in what manner the same is to be performed, we declare that what we claim is:—

1. A fastening device of the kind comprising two longitudinally extending members, which are secured to borders of the pieces of fabric or other material to be fastened together and which each bear a series of projections made of india

- rubber or like flexible material, and a sliding member bearing cam surfaces and adapted to bring the projections of one series into and out of interlocking engagement with the projections of the other series, wherein guide ribs or strips are provided on both sides of the pieces of fabric or other material, and one or both of the pairs of guide ribs or strips and corresponding guideways in the sliding member are so shaped as to control the movement of the longitudinally extending members both towards and away from one another.
15. A fastening device as claimed in Claim 1, wherein the guide rib or strip on the upper or outer side of each piece of fabric or other material is formed integrally with the longitudinally extending member secured to such piece of fabric or other material.
20. A constructional form of the fastening device claimed in Claim 1, or in Claim 2, wherein the upper and lower body members of the slider are formed integrally with one another.
25. A constructional form of the fastening device claimed in Claim 3, wherein the upper and lower body members of the slider are held in the desired relative positions by means of a tubular distance piece having a rivet or like tension member extending through it.
30. A constructional form of the fastening device claimed in any of Claims 1 to 4, wherein the cams for effecting the inter-
- locking of the flexible projections on the longitudinally extending members of the fastening are formed of separate pieces of metal secured to the body members of the slider by means of lugs extending through holes or slots in such body members.
35. A constructional form of the fastening device claimed in any of Claims 1 to 4, wherein the cams for effecting the interlocking of the flexible projections on the longitudinally extending members of the fastening are formed integrally with the body members of the slider.
40. A constructional form of the fastening device claimed in any of Claims 1 to 4, wherein the outer or upper body member of the slider is provided with lateral guide extensions for the flexible projections on the longitudinally extending members.
45. A constructional form of the fastening device claimed in any of Claims 1 to 6, wherein the outer or upper body member of the slider is provided with lateral guide extensions for the flexible projections on the longitudinally extending members.
50. A constructional form of the fastening device claimed in Claim 7, wherein the lateral guide-extensions are provided with curved inwardly extending guide surfaces.
55. The several forms of my improved fastening device hereinbefore described with reference to the figures of the drawing accompanying my Provisional Specification.
60. Dated this 20th day of September, 1932.
- D. YOUNG & Co.,
11 & 12, Southampton Buildings,
London, W.C.2,
Agents for the Applicants.

[This Drawing is a reproduction of the Original on a reduced scale.]

